

Excessive lowering of BP causes more harm than good

Clinical question Can aggressive lowering of blood pressure in patients with coronary artery disease be dangerous?

Bottom line Lower is not always better. Despite a push towards lower blood pressure in many populations, bad outcomes (mortality, myocardial infarction and stroke) are increased in patients with coronary artery disease (CAD) if their diastolic blood pressure consistently remains lower than 70mmHg.

Synopsis Research has hinted at a J-shaped response to lowering blood pressure: as blood pressure is lowered, mortality and morbidity decrease, to a point, after which further lowering is associated with higher mortality and morbidity. Some guidelines and conventional wisdom do not take this risk into account and advocate various degrees of aggressive blood pressure control on the basis of other risk factors. This study is an analysis of the results of a prospective cohort study comparing the effectiveness of verapamil and trandolapril in hypertensive patients with CAD. In this analysis, the investigators evaluated the relationship between average diastolic blood pressure and the primary outcome of all-cause death, non-fatal stroke and non-fatal myocardial infarction in the 22,576 patients enrolled in the study. The patients in this study were treated and monitored for a median of 2.7 years and mortality and morbidity rates were not

different between the two treatments. Blood pressure was divided into 10mmHg increments and this outcome was evaluated at each level of control. As in other research, the J-curve is present in these data, associated with decreases in diastolic blood pressure. The best outcomes were seen with a diastolic blood pressure between 80mmHg and 90mmHg. A diastolic blood pressure between 70mmHg and 80mmHg was associated with slightly, but not significantly, worse outcomes. Patients with blood pressures of lower than 70mmHg experienced bad outcomes at the same rate as those with readings higher than 100mmHg.

Level of evidence 1b (individual randomised controlled trial with narrow confidence interval).

Reference Messerli FH, Mancia G, Conti CR, et al. Dogma disputed: can aggressively lowering blood pressure in hypertensive patients with coronary artery disease be dangerous? *Annals of Internal Medicine* 2006;144:884-893.

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